Using agricultural biodiversity to improve diet quality in Western Kenya

Western Kenya is among the regions of Kenya endowed with rich biodiversity partly attributed to the diversity of landscapes, ecosystems and habitats. Many cultivated and wild species and varieties have potential to contribute to diets and nutrition. Studies have shown that dietary diversity is associated with improved nutrition. Despite the richness of biodiversity in Western Kenya, the region still remains food insecure. Both maternal and child malnutrition are significant health problems. The 2008-09 Kenya Demographic Health Survey revealed that 34.2% of the children under 5 years of age are stunted and 11.8% were underweight while 9.7% of the mothers were thin (BMI<18.5). At the same time, as in many developing countries, obesity and overweight are on the rise in Western Kenya; 18% of mothers and 5% of children under the age of five were described as being overweight. Micronutrient deficiencies – when there is a lack of vital vitamins and/or minerals in the diet – are also widespread in this region. Iron deficiencies affect practically all infants, as well many women and adolescent girls.

What Bioversity International is doing in Western Kenya

Research Questions

- What is the available agricultural biodiversity in the humid tropics? How does that relate to the food and nutrition security of the rural poor living in these regions?
- What are the practices and perceptions surrounding the utilization of available agricultural biodiversity? What is the quality and accessibility of complementary foods suitable for infants and young children aged 6 months to two? Can using diverse locally available foods improve the dietary quality and the nutrition and health of the target groups during all seasons of the year?
- How effective is nutrition education as a behaviour change strategy to improve dietary quality? Is it sustainable?
- How can biodiversity be embedded into policy programmes and action plans for improved nutrition and health?
- What are the market opportunities for African Leafy Vegetables (ALVs) and other traditional foods?

Photo: African leafy vegetables for sale in market, Kenya.
Credit: Bioversity International/Y.Morimoto

Encouraging results

Preliminary analysis from the 'Improving Nutrition through Local Agrobiodiversity project'* shows that nutrition education motivated the caregivers/mothers of infants and children 6-24 months to improve the diversity and quality of complementary diets by using accessible local food resources. Infants and children from 6-23 months received a more diverse diet after their mothers had been informed about better food choices. This was reflected in the dietary diversity scores, whereby infants and children in the group receiving nutrition education increased their score over the study from 3.5 to 4.2 food groups per day and the score in the control group who were not receiving this education dropped from 3.5 to 3.3 This change is statistically significant (P=0.001). It is thus possible to improve the quality of the diet provided to infants and young children using combinations of local foods.

The GEF Biodiversity for Food and Nutrition (BFN) Initiative,* in Busia County, has shown that promoting the cultivation of a diversity of highly nutritious crops such as African Leafy Vegetables (ALVs), which are well-adapted to the local climate and require limited management and inputs for growth. A market study revealed that spider plant (*Cleome gynandra*), African nightshade (*Solanum* spp.) and amaranth (*Amaranthus* spp.) are ranked as the top three most important species sold and marketed in this area. The BFN Initiative is reviewing the national policy framework to identify suitable policy entry points for the promotion of biodiversity for food and nutrition in Kenya.

* *'Improving Nutrition through Local Agrobiodiversity' was supported by the German Federal Ministry of Economic Cooperation and Development (BMZ) and the CGIAR Research Program on Agriculture for Nutrition and Health. It is led by Bioversity International in collaboration with the University of Giessen, Germany, Kenyatta University, Nairobi, Kenya, district community health workers and the target community members in Western Kenya.*

* *The GEF 'Mainstreaming biodiversity for nutrition and health' initiative is led by Brazil, Kenya, Sri Lanka and Turkey and coordinated by Bioversity International, with implementation support from the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO) and additional support from the CGIAR Research Program on Agriculture for Nutrition and Health.*

Future work

- Generate more food composition data for lesser known species
- Assess longer-term impact of nutrition education activities
- Organize participatory community sessions to identify nutrition-sensitive agricultural interventions combined with nutrition education
- Carry out participatory implementation and evaluation of interventions identified at the community level
- Application of Cost of Diet and Optifood modelling tools to propose improved diets and recipes for discussion in communities, organize cooking demonstrations
- Integrate nutrition work in the Nutrition-Sensitive Landscapes Initiative which uses a dynamic systems approach, bringing together nutritional, environmental and agricultural targets. It aims to create synergies and minimize trade-offs between reducing the malnutrition of vulnerable populations and restoring and employing ecosystem services.
- Develop strategies to enhance African Leafy Vegetable market competitiveness and promote consumption
- Develop a biodiversity conservation policy that takes into account the importance of conserving and promoting the use of biodiversity for food and nutrition

Partners

This work is carried out as part of the CGIAR Research Programs on Integrated Systems for the Humid Tropics and Agriculture for Nutrition and Health, as well as the Biodiversity for Food and Nutrition Initiative. It is implemented in collaboration with the Kenya Agriculture and Livestock Research Organization (KALRO), University of Giessen, Germany, Kenyatta University, Kenya, The World Agroforestry Center (ICRAF), district community health workers and the target community members in Western Kenya.

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